RLP-AIDA · RLP AI Design A — Machine Learning, Media and the Human Body

Unit 3: Drawing the Body: The Eleven Organ Systems

Practice Workbook. The same problems, in the same order, as the Practice sections of the online lessons.

Name _____ Period _____

Lesson 3.1 — Art and Anatomy: Five Centuries of Seeing Inside the Body

FLUENCY

1. Match each work to its date and its key design idea: Vesalius's Fabrica; Mansur ibn Ilyas's Anatomy of the Human Body; Kaitai Shinsho; Gray's Anatomy (drawings by Carter). Dates: 1543, late 14th century, 1774, 1858. Ideas: direct labeling; sequence by layer; one schematic figure per system; images crossing languages after comparison with a dissection.

2. Define each view type in one phrase: cutaway, cross-section, schematic, exploded view, sequence.

3. True or false, and explain: arteries are drawn red and veins blue because that is the color of the blood inside them.

APPLICATION

4. Choose the best view type for each goal and explain briefly: (a) show the chambers inside the heart; (b) show the path of nerves from the spinal cord to the hand; (c) show how the bones of the skull fit together; (d) show an organ as it appears on an MRI.

5. Compare Vesalius's muscle figures with Mansur ibn Ilyas's figures. For each, name the approach and one thing it makes easy to understand.

6. Why did Carter's direct labeling help Gray's Anatomy last? Give one situation where a numbered key would still be the better choice.

7. What does the story of Kaitai Shinsho show about images, according to the lesson? Answer in 2 sentences.

REVIEW

8. Review 1.1: Vesalius's plates peel back one layer at a time. Which of the three design moves from Unit 1 (encoding, hierarchy, sequence) is this, and why?

Lesson 3.2 — Sculpting a System: Modeling Structure and Function

FLUENCY

1. List the six levels of organization from smallest to largest.

2. Name the organ system: (a) kidneys, ureters, bladder; (b) lymph nodes, spleen, thymus; (c) skin, hair, nails; (d) brain, spinal cord, nerves.

3. Name the four classic physical examination techniques and what each one involves.

APPLICATION

4. For each structure, state the function it serves and one way a model could make that visible: (a) alveoli; (b) villi of the small intestine; (c) the thick left ventricle wall.

5. A heart model is enlarged 3 times. If a heart is drawn from a reference as 12 cm tall, how tall is the model? The lesson says keep clay thinner than about 2 cm; why might a solid 36 cm heart be a problem?

6. Write a key card for a clay model of the respiratory system that shows the alveoli. Include: system, scale, the structure-function relationship, what you simplified, and examination technique(s).

7. Match each function to its system: (a) sends chemical signals called hormones through the blood; (b) stores minerals and makes blood cells in bone marrow; (c) breaks down and absorbs food; (d) filters blood and regulates water and salt.

REVIEW

8. Review 3.1: Your model of the heart is cut open to show the chambers. Which view type is that, and which alternative view would separate the parts slightly to show how they fit?

Lesson 3.3 — Clinician and Patient: Role-Play and the Critique of Health

Communication

FLUENCY

1. Define *health literacy*, *plain language* and *teach-back*.

2. List the four requirements the clinician's three-minute explanation must meet in the role-play.

3. Name the three critique criteria for the recording and the question each asks.

APPLICATION

4. Rewrite in plain language for an invented patient: 'Your bronchioles exhibit inflammation and constriction with increased mucus secretion.'

5. Turn this into teach-back: 'Do you understand what high blood pressure is?'

6. Write one defensible evaluation for the visual-support criterion of this invented recording: the clinician held up a detailed diagram of the whole skeleton while explaining osteoporosis, and the weaker bone was never pointed out.

7. Your visual aid shows a healthy airway in green and a narrowed one in red. Give two problems and two fixes.

8. Your script has the clinician speak for 150 seconds, the patient ask two questions taking 10 seconds each, and the clinician answer each in 15 seconds. Does it fit the three-minute limit? Show the arithmetic.

REVIEW

9. Review 1.3: The role-play critique uses criteria, evidence and a suggestion. Which of the Unit 1 critique rules says to begin every evaluative statement with these?

Lesson 3.4 — Illustrating a Condition: Panels for One Body System

FLUENCY

1. Define *leader line*, *value* and *spirometry*.

2. What are the lesson's rules for labels? Give three.

3. How long should the panel's caption be, and what three things should it say?

APPLICATION

4. Describe the normal-beside-affected comparison for asthma the lesson suggests: what view, and what three differences appear in the affected airway?

5. About one in twelve men has some form of red-green color-vision deficiency. In an invented audience of 600 men, about how many is that? What test does the lesson recommend for your panel?

6. You scan a hand-drawn panel that is 8 inches by 10 inches at 300 pixels per inch. What are the pixel dimensions, and how many pixels in total?

7. Write a 40-60 word plain-language caption for an invented panel on high blood pressure. Use only facts from the unit: it often has no symptoms and is found by measurement with a blood pressure cuff.

CHALLENGE

8. A draft caption says: 'Asthma is caused by stress and can be cured by breathing exercises.' Using the accuracy check, explain what is wrong and rewrite it from the unit's facts only.

REVIEW

9. Review 3.2: Which examination technique is listening with a stethoscope, and which body sounds does the lesson say it is used for?

Unit 3 checkpoint

1. Whose anatomy book was illustrated with wood engravings that print the names of structures directly on the parts?
   A. Vesalius
   B. Mansur ibn Ilyas
   C. Gray, with drawings by Henry Vandyke Carter
   D. Sugita Genpaku
2. A view of the body as if sliced through, as in CT and MRI, is a _____.
3. True or false: Coloring veins blue is a convention, not a fact about blood color.
4. Which system returns fluid to the blood and houses immune cells?
   A. Lymphatic
   B. Urinary
   C. Endocrine
   D. Integumentary
5. The six levels of organization run chemical, cellular, _____, organ, organ system, organism.
6. Tapping on the body to hear whether a region is hollow or solid is:
   A. Inspection
   B. Palpation
   C. Percussion
   D. Auscultation
7. Teach-back tests:
   A. The patient's intelligence
   B. Whether the clinician's explanation worked
   C. The patient's memory of medical terms
   D. How long the visit lasts
8. True or false: A good health visual shows everything the clinician knows about the condition.
9. Why should a panel use value (light and dark) as well as hue?
   A. Value is cheaper to print
   B. So the panel still works in grayscale and for viewers with color-vision deficiency
   C. Hue is not allowed in science
   D. Value makes labels longer
10. On the panel, labels use everyday words first and the _____ term second.
11. True or false: The atlas panel may state treatments for the condition as long as they sound reasonable.

Sejal Learning Systems · Royal Legacy Preparatory School · Generated from the course's practice files; generated problems are checked by computer, authored problems by their author.